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REMARKS

Objection to drawings

FIGs. 1A, 1B, 1C, 1D, and 2 have been objected to due to their not including a legend such as – Prior Art --. Applicant notes, however, that FIG. 2 already includes this legend. With respect to FIGs. 1A, 1B, 1C, and 1D, Applicant has provided substitute drawing sheets for these figures, including this legend. Applicant thus requests that this objection be withdrawn.

Claim rejections under 35 USC 112

Claims 1-19 have been rejected under 35 USC 112, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Applicant has appropriately amended the claims, as is discussed below, and requests that this rejection be withdrawn.

The Examiner first indicated that the term “polymer” is not understood since a polymer is a production of a reaction between certain gases and therefore it is not understood how the polymer is introduced into the chamber. By way of explanation, Applicant submits that polymer introduction into a plasma chamber is a commonly known and used phrase by those of ordinary skill within the art, to indicate that a polymerizing gas, such as a hydrocarbon or a hydrofluorocarbon, is introduced into the plasma chamber to cause polymer formation that is needed for high-aspect ratio and other types of dry etching. That is, one of ordinary skill within the art understands that “introducing polymer into a plasma chamber” is essentially shorthand for introducing a polymerizing gas into the chamber that results in polymer formation therein. However, Applicant can understand the Examiner’s point in this regard, and therefore has amended the term “polymer” to instead read “polymerizing gas.”

The Examiner also indicated that the phrases “over the chamber” and “below the chamber” are not understood, since positioning a wafer over the plasma chamber, or a dielectric window below the chamber, would seem to suggest that the wafer or the window are outside of the plasma chamber. By way of explanation, Applicant submits that what *can* be meant by the plasma chamber is the volume of space surrounded by walls, etc., and in which plasma-oriented chemical reactions occur. For instance, the plasma chamber does not necessarily include the walls, etc., such that saying that a wafer is over the chamber means that the wafer is positioned over the volume of space in which the reactions occur, and not necessarily outside of the physical entity inclusive of the walls, etc. However, Applicant can understand the Examiner’s point in this regard, and therefore has amended the phrase “over the chamber” to “at the top of the chamber” and the phrase “below the chamber” to “at the bottom of the chamber.”

Furthermore, the Examiner indicated that the indication in the claims of the wafer chuck moving the wafer is unclear. Applicant has removed such indication from the pending claims, such that the rejection of this phraseology is now moot.

Finally, the Examiner has indicated that the phrases “inductive supply” and “electromagnetic supply” are not clear. Applicant has removed these phrases from the pending claims, such that the rejection of this phraseology is now moot.

Claim rejections under 35 USC 102

Claims 1-8, 11-17, and 19 have been rejected under 35 USC 102(b) as being anticipated by Ishii (5,571,366). Of these claims, claims 2, 6, and 14 have been cancelled. Furthermore, claims 1 and 12 are independent claims, from which the other of these claims that have not been cancelled ultimately depend. Applicant has amended claims 1 and 12 to better clarify their subject inventions relative to Ishii, and submits that as amended, claims 1 and 12 are not anticipated by, nor obvious over, Ishii. Applicant therefore now specifically discusses the

patentability of claims 1 and 12 relative to Ishii, but notes that the other of these pending claims are patentable over Ishii for at least the same reasons that claims 1 and 12 are.

Both claims 1 and 12 are now limited to inclusion of a wafer lifter that: 1) is positioned at the top of the plasma chamber; 2) has sidewalls defining a first diameter greater than a diameter of the wafer; 3) has a bottom having a hole therein having a second diameter less than the first diameter and less than the diameter of the wafer; and, 4) is such that the semiconductor wafer is exposed from the bottom of the wafer lifter through the hole therein. It is noted that FIGs. 3, 4A, and 4B of the patent application as filed provides support for these amendments, and provides one example of such a semiconductor dry etching system to which claims 1 and 12 are limited.

Applicant submits that Ishii does not teach, disclose, or suggest such a semiconductor dry etching system having a wafer lifter to which claims 1 and 12 are now limited. The relevant figure in Ishii is FIG. 12, which shows a semiconductor dry etching system in which the wafer is supported upside-down by the wafer lifter 76. However, the wafer lifter 76 of Ishii does not meet the limitations of the wafer lifter to which claims 1 and 12 are now limited.

First, the wafer lifter 76 of Ishii is not positioned at the top of the plasma chamber. For instance, in the patent application as filed, FIG. 3 shows one example in which a wafer lifter 326 is positioned at the top of the plasma chamber. By comparison, in FIG. 12 of Ishii, the wafer lifter 76 is positioned at the *bottom* of the plasma chamber. Furthermore, it is not obvious to modify Ishii so that its wafer lifter 76 is positioned at the top of the plasma chamber, because doing so would render Ishii inoperable. That is, the wafer rests on or is supported by the *top* of the wafer lifter 76 in Ishii, so if the wafer lifter 76 were positioned at the top of the chamber, the wafer would clearly be outside of (i.e., above) the chamber, because the top of the lifter 76 would be outside of the chamber, and not inside the chamber. Thus, the only way for a wafer lifter to function when it is positioned at the top of the chamber is for it to support the wafer at the *bottom* of the wafer lifter, as in FIG. 3 of the patent application as filed, because only the bottom of the wafer lifter in such instance is inside the chamber. But this is not how the wafer lifter 76 of Ishii

works. Because Ishii's wafer lifter supports the semiconductor wafer at its top, the wafer lifter of Ishii must necessarily be positioned at the bottom of the chamber, in contradistinction to the claimed invention.

Second, the wafer lifter 76 does not have sidewalls defining a first diameter greater than a diameter of the wafer. For instance, in the patent application as filed, FIGs. 4A and 4B show one example in which a wafer lifter 326 has such sidewalls defining a first diameter 404 that is greater than the diameter 406 of the wafer. By comparison, in FIG. 12 of Ishii, the diameter defined by the sidewalls of the wafer lifter 76 is necessarily less than the diameter of the wafer, since the wafer has to rest on the top of these sidewalls. Therefore, it is not obvious to modify Ishii so that the diameter is defined by the sidewalls of the wafer lifter 76 is greater than the diameter of the wafer, because doing so would render Ishii inoperable. That is, if the diameter of the wafer lifter 76 were greater than the diameter of the wafer, the wafer would no longer be able to be supported at the top of the wafer lifter 76, and the wafer would fall through from the top of the lifter 76 to its bottom. Thus, in contradistinction to the claimed invention, the sidewalls of Ishii must define a diameter less than the diameter of the wafer.

Third, the wafer lifter 76 does not have a bottom having a second diameter less than the first diameter and less than the diameter of the wafer. For instance, in the patent application as filed, FIGs. 4A and 4B show one example in which a wafer lifter 326 has a bottom having a second diameter 408 that is less than the diameter 406 of the wafer. By comparison, in FIG. 12 of Ishii, the bottom of the wafer lifter 76 has no hole, and therefore has no diameter that can be compared to the diameter of the wafer. Furthermore, it is not obvious to modify Ishii to have

such a hole at the bottom of the wafer lifter 76. First, there is no motivation to do so. The point of having such a hole in the claimed invention is to support the wafer, but in Ishii, the top of the sidewalls of the wafer lifter 76 supports the wafer, so there is not motivation to add in such a hole in Ishii, because the wafer is already supported without adding such a hole. Second, adding such a hole would render Ishii inoperable. This is because the pole that is at the bottom of the wafer

lifter 76, and which presumably allows it to move up and down (see the pole that is above the bi-directional arrow at the very bottom of FIG. 12), would not be attached to the wafer lifter 76 if there were instead a hole at the bottom of the wafer lifter 76 (i.e., a pole could not mount to a hole). This renders the notion of Ishii being modified to have a hole with a diameter as to which the claimed invention is limited a physical impossibility.

Fourth, the semiconductor wafer is not exposed from the bottom of the wafer lifter 76 in Ishii. For instance, in the patent application as filed, FIGs. 3, 4A, and 4B show how the semiconductor wafer is exposed from the bottom of the wafer lifter 326 through the hole therein. By comparison, in FIG. 12 of Ishii, the wafer is exposed at (or from) the *top* of the wafer lifter 76, not from the bottom of the wafer lifter as in the claimed invention. Modifying Ishii so that the wafer is exposed from the bottom of the wafer lifter would render Ishii inoperable, however. This is because the bottom of the wafer lifter 76 actually lies *outside* of the plasma chamber (see FIG. 12). So exposing the wafer from the bottom of the lifter 76 would mean that the wafer is outside of the plasma chamber, such that Ishii's dry etch system would simply not work.

Claim rejections under 35 USC 103

Claim 9 has been rejected under 35 USC 103(a) as being unpatentable over Ishii in view of Uchida or "Ishii 2" (5,795,429). Claim 9 is a dependent claim ultimately depending from independent claim 1, however, and therefore is patentable for at least the same reasons that claim 1 is patentable, as has been discussed above.

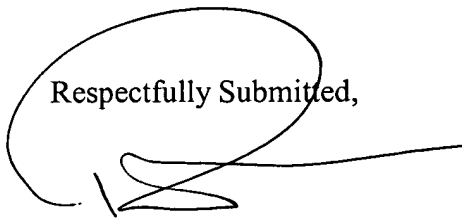
Claims 10 and 18 have been rejected under 35 USC 103(a) as being unpatentable over Ishii in view of Admitted Prior Art. Claim 10 is a dependent claim ultimately depending from independent claim 1, whereas claim 18 is a dependent claim ultimately depending from independent claim 12. Therefore, claims 10 and 18 are patentable for at least the same reasons that claims 1 and 12 are, as has been discussed above.

Claims 1-8 and 10-19 have been rejected under 35 USC 103(a) as being unpatentable over Admitted Prior Art in view of Ishii. The Examiner admits that the Admitted Prior Art does not disclose a wafer lifter that holds the wafer upside-down within the plasma chamber, and therefore relies upon Ishii in disclosing this limitation, such that the combination of the Admitted Prior Art and Ishii renders the claimed invention obvious. However, as has been described, Ishii does not disclose, teach, or suggest a wafer lifter as to which the claims are now limited. Therefore, for at least similar reasons, the Admitted Prior Art in view of Ishii also does not disclose, teach, or suggest a wafer lifter as to which the claims are now limited. Those of the claims 1-8 and 10-19 that remain pending are thus patentable over the Admitted Prior Art in view of Ishii.

Conclusion

Applicant has made a diligent effort to place the pending claims in condition for allowance, and request that they so be allowed. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Randy Tung, Applicants' Attorney, at 248-540-4040, so that such issues may be resolved as expeditiously as possible. For these reasons, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,



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